

## CLAIMS

1. A radio repeater (8) for use in a short range radio communication system (1), the repeater (8) comprising a receiver for receiving a signal in a first frequency band and a transmitter for transmitting the signal in a second frequency band.  
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2. The radio repeater (8) of claim 1, wherein the transmitter transmits the signal over a maximum range shorter than the maximum range of typical communication devices (5,6) intended to operate in the radio communication system (1).  
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3. The radio repeater (8) of claim 1 or claim 2, wherein the transmitter transmits the signal over a maximum range of around 1m or less.  
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4. The radio repeater (8) of any one of the preceding claims, wherein the transmitter transmits the signal at power less than the power of typical communication devices (5,6) intended to operate in the radio communication system (1).  
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5. The radio repeater (8) of any one of the preceding claims, wherein the first frequency band is the designated band of a short range wireless connectivity standard.
- 25 6. The radio repeater (8) of any one of the preceding claims, wherein the second frequency band is at a lower frequency than the first frequency band.
- 30 7. The radio repeater (8) of any one of the preceding claims, further comprising a means (12) for shifting the signal from the first frequency band to the second frequency band.

8. The radio repeater (8) of claim 7, wherein the signal is shifted by a constant frequency offset.

9. The radio repeater (8) of any one of the preceding claims,  
5 comprising a filter (10) for filtering signals received in the first frequency band to remove signals and noise that may interfere with a signal received from a first communication device (5,6) when transmitted by the repeater (8).

10. The radio repeater (8) of any one of the preceding claims,  
10 comprising means for identifying the channel in which a/the first communication device (5,6) is transmitting the signal and filtering (the) signals received in the first frequency band to receive the signal in the channel.

11. The radio repeater (8) of any one of the preceding claims,  
15 wherein the repeater (8) only transmits when it receives a signal in the first frequency band above a given signal strength.

12. The radio repeater (8) of any one of the preceding claims  
capable of being worn on or attached to the body or clothing of a user (4).

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13. A short range radio communication (1) system comprising:  
a first communication device (5,6) for transmitting the signal in the first  
frequency band;  
the repeater (8) of any one of the preceding claims; and  
25 a second communication device (5,6) for receiving the signal in the first  
frequency band or the second frequency band.

14. The short range radio communication (1) system of claim 13,  
wherein the second communication device (5,6) selects to receive the signal in  
30 the second frequency band when the quality of the signal in the first frequency  
band is poor.

15. A method of repeating a signal in a short range radio communication system (1), the method comprising receiving a signal in a first frequency band and transmitting the signal in a second frequency band.

5 16. The method of claim 15, comprising transmitting the signal over a maximum range shorter than the maximum range of typical communication devices (5,6) intended to operate in the radio communication system (1).

10 17. The method claim 15 or claim 16, comprising transmitting the signal over a maximum range of around 1m or less.

18. The method of any one of claims 15 to 17, comprising transmitting the signal at power less than the power of typical communication devices (5,6) intended to operate in the radio communication system (1).

15 19. The method of any one of claims 15 to 18, wherein the first frequency band is the designated band of a short range wireless connectivity standard.

20 20. The method of any one of claims 15 to 19, wherein the second frequency band is at a lower frequency than the first frequency band.

21. The method of any one of claims 15 to 20, comprising shifting the signal from the first frequency band to the second frequency band.

25 22. The method of claim 21, comprising shifting the signal by a constant frequency offset.

30 23. The method of any one of claims 15 to 22, comprising filtering signals received in the first frequency band to remove signals and noise that may interfere with a signal received from a first communication device when transmitted by the repeater.

24. The method of any one of claim 15 to 23, comprising identifying the channel in which a/the first communication device (5,6) is transmitting the signal and filtering (the) signals received in the first frequency band to receive  
5 the signal in the channel.

25. The method of any one of claims 15 to 24, comprising only transmitting a signal when a signal is received in the first frequency band above a given signal strength.  
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26. A method of short range radio communication comprising:  
transmitting the signal in the first frequency band;  
repeating the radio signal using the method of any one of claims 15 to  
25; and  
15 receiving the signal in the first frequency band or the second frequency band.

27. The method of claim 26, comprising selecting to receiving the signal in the second frequency band when the quality of the signal in the first  
20 frequency band is poor.